What is claimed is:

1. A method of manufacturing a rigid internal gear of a wave gear device, in which the rigid internal gear comprises a main gear ring and a tooth-forming ring having internal teeth formed on an inner circumferential surface thereof and, in which the tooth-forming ring is disposed inside the main gear body and integrally bonded thereto,

the method comprising steps of:

aluminizing an outer circumferential surface of the tooth-forming ring to form an aluminum-dispersed covering layer; and

applying enveloped casting to the main gear ring and the tooth-forming ring so as to integrate them.

2. A method of manufacturing a rigid internal gear according to Claim 1,

wherein fine concaves and convexes are formed in the outer circumferential surface of the tooth-forming ring before the aluminizing step is performed.

3. A method of manufacturing a rigid internal gear according to Claim 1 or 2,

wherein the enveloped casting is carried out in a condition that the tooth-forming ring is heated to a temperature of at least 150°C.

4. A method of manufacturing a rigid internal gear according to any of Claims 1, 2 and 3,

wherein the tooth-forming ring is formed of one of ductile cast

iron and austenitic spheroidal graphite iron, and the main gear ring is formed of one of aluminum, aluminum alloy, magnesium, and magnesium alloy.

5. A method of manufacturing a rigid internal gear according to any of Claims 1 to 4,

wherein a thickness of bottom of the tooth-forming ring is set in a range of 1m to 5m, where m is a module of the rigid internal gear .

6. A method of manufacturing a rigid internal gear according to any of Claims 1 to 5,

further comprising a gear cutting process for forming the internal teeth on the tooth-forming ring, which is carried out after the tooth-forming ring is integrated with the main gear ring.

7. A rigid internal gear of a wave gear device manufactured by a method of manufacturing according to any of Claims 1 to 6.

8. A method of manufacturing a rigid internal gear of a wave gear device, in which the rigid internal gear comprises a main gear ring and a tooth-forming ring having internal teeth formed on an inner circumferential surface thereof and, in which the tooth-forming ring is disposed inside the main gear body and integrally bonded thereto,

the method comprising steps of:

forming the main gear ring from a first material that has a low linear expansion coefficient;

forming the tooth-forming ring from a second material that has a high linear expansion coefficient; and

pressing the tooth-forming ring into an inside of the main gear ring and diffusion-combining the tooth-forming ring and the main gear ring.

9. A method of manufacturing a rigid internal gear according to Claim 8,

wherein the first material is a titanium alloy with a linear expansion coefficient of approximately 8.8×10^{-6}, and

the second material is a ferrous material with a linear expansion coefficient of approximately 12.0×10^{-6}.

10. A method of manufacturing a rigid internal gear according to Claim 8,

wherein the first material is a ceramic material with a linear expansion coefficient of approximately 7.8×10^{-6}, and

the second material is a stainless steel material with a linear expansion coefficient of approximately 17.0×10^{-6}.

11. A method of manufacturing a rigid internal gear according to Claim 8,

wherein the first material is an aluminum alloy with a linear expansion coefficient in a range of 6.2×10^{-6} to 10.0×10^{-6}, and

the second material is an aluminum alloy with a linear expansion coefficient in a range of 20×10^{-6} to 24×10^{-6}.

12. A method of manufacturing a rigid internal gear according to any of Claims 8 to 11,

wherein an inner circumferential surface of the main gear ring is

tapered,

an outer circumferential surface of the tooth-forming ring is tapered so that the tooth-forming ring can be pressed into the tapered inner circumferential surface of the main gear ring, and

the tooth-forming ring is pressed onto the inner circumferential surface of the main gear ring and the tooth-forming ring and main gear ring are diffusion-bonded together.

13. A method of manufacturing a rigid internal gear according to any of Claims 8 to 12,

wherein a gear cutting process for forming the internal teeth on the tooth-forming ring is performed after the tooth-forming ring has been joined to the main gear ring to form a single body.

14. A rigid internal gear of a wave gear device manufactured by a method of manufacturing according to any of Claims 8 to 13.

15. A method of manufacturing a rigid internal gear of a wave gear device, in which the rigid internal gear comprises a main gear ring and a tooth-forming ring having internal teeth formed on an inner circumferential surface thereof and, in which the tooth-forming ring is disposed inside the main gear body and integrally bonded thereto,

the method comprising steps of:

adding knurls to an outer circumferential surface of the tooth-forming ring and carving, from tops of the knurls, at least one cutting edge that extends in a circumferential direction; and

pressing the tooth-forming ring into an inside of the main gear ring while having at least one cutting edge formed on the outer

circumferential surface of the tooth-forming ring cut an inner circumferential surface of the main gear ring so as to integrate the main gear ring and the tooth-forming ring.

16. A method of manufacturing a rigid internal gear according to Claim 15,

wherein the main gear ring is formed from one of an aluminum alloy, a titanium alloy, and a ceramic material, and

the tooth-forming ring is formed from one of a ferrous material and a copper material.

17. A method of manufacturing a rigid internal gear according to Claim 15 or Claim 16,

wherein a gear cutting process for forming the internal teeth on the tooth-forming ring is performed after the tooth-forming ring is integrated with the main gear ring.

18. A rigid internal gear of a wave gear device manufactured by a method of manufacturing according to any of Claims 15 to 17.